

a¹ Incl
plane in a condition where the oscillating body 5 is excitation-oscillated in the X-direction as described above. The Coriolis force is applied to the oscillating body 5, and the oscillating body 5 is oscillated in the direction of the Coriolis force. The clearance between the above-described movable electrodes 13 and fixed electrodes 14 is changed by the oscillation in the Y-direction of the oscillating body 5 attributable to the Coriolis force, and the electrostatic capacity between the movable electrodes 13 and the fixed electrodes 14 is changed. The magnitude of the angular velocity of the rotation can be detected by detecting the electrical signal corresponding to the magnitude of the amplitude of the oscillation in the Y-direction of the oscillating body 5 generated by the above-described Coriolis force making use of the change in electrostatic capacity. Thus, the sensor element 1 of the angular velocity sensor illustrated in FIGs. 6A and 6B forms a movable element having a movable part such as the oscillating body 5 and a support beam 7.

Replace the second full paragraph on page 5 of the specification with the following paragraph:

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The etching stop layer 18 to be formed in manufacturing the external force detection sensor such as the angular velocity sensor has to be conventionally formed of an insulating material such as silicon oxide from the viewpoint of facilitation of forming a layer and simplification of a manufacturing process of the external force detection sensor. However, the inventor noticed that a notch (a profile distortion) is formed on a lower part side (i.e., a side on which the etching stop layer 18 is formed) of a side wall surface of the through holes 20 as illustrated in FIG. 7E since the etching stop layer 18 is formed of the insulating material as described above.

Replace the first full paragraph on page 8 of the specification with the following paragraph:

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However, when through holes 20A are generated during the over etching as

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illustrated in FIG. 8B, the temperature of a part between the over etched through holes 20A (for example, a hole indicated by the reference numeral 21 in FIG. 8B) rises. That is, when the electrons in the etching gas collide with the side wall surface of the through hole 20A during the over etching to generate heat, the hole 21 is thermally independent from other areas since the etching stop layer 18 is formed of the insulating material and its heat conductivity is very inferior, the heat is stored in the side wall surface of the hole 21, and the temperature of the hole 21 rises higher than the other areas. Thus, the hole 21 becomes easier to etch than the other areas, the etching removal is excessively achieved as indicated by a solid line while the true etching removal should be originally achieved to the dimension as indicated by a broken line in FIG. 8C, resulting in a part not being formed to the designed dimension because of the excessive etching.

IN THE CLAIMS:

Please replace claims 1, 2, 5, 9 and 10 with the following claims:

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1. A method of manufacturing an external force detection sensor comprising the steps of:
- providing an element substrate;
 - forming a recess in a surface of the element substrate;
 - forming an etching stop layer of an electrically conductive material on the surface of the element substrate having the recess formed therein;
 - through-hole dry etching the surface of the element substrate using the etching stop layer;
 - forming a sensor element including a vibrating body, fixed electrodes and movable electrodes on the element substrate;
 - removing the etching stop layer; and
 - completing the manufacturing of the external force detection sensor.